AMENDMENTS TO THE CLAIMS

1.   1.   (Currently Amended) Apparatus including

2   a first device having a plurality of network input interfaces and a plurality of

3   network output interfaces, said first device including a packet information extractor

4   coupled to at least one of said network input interface, said first device comprising

5   logic for extracting packet information without performing packet forwarding

6   decisions;

7   a second device coupled to said packet information extractor, said second

8   device comprising logic configured for generating packet forwarding information and

9   output port information responsive to an output of said packet information extractor,

10   wherein said second device performs generating packet forwarding information

11   substantially for first packets substantially in parallel with said first device performing

12   extracting packet information for other packets, wherein the second device accesses a

13   forwarding memory to record one or more forwarding information rules as the

14   forwarding information rules become available to the second device in response to

15   changes in any one of network topology, access control, and administrative and

16   managerial rules;

17   an information link, coupled to said first device and said second device;

18   a network flow routing engine coupled to said second device, wherein the

19   network flow routing engine determines network flow packet forwarding information

20   in response to receiving network flow information associated with said output of said

21   packet information extractor and provides said network flow packet forwarding

22   information to said second device, wherein said second device uses said network flow

23   packet forwarding information in generating said packet forwarding information;

24   an input access content addressable memory coupled to said second device

25   and operable to determine whether access is permitted at any one of said plurality of

26   network input interfaces; and

27   an output access content addressable memory coupled to said second device

28   and operable to determine whether access is permitted at any one of said plurality of

29   network output interfaces.

1   2.   (Original)   Apparatus as in claim 1, wherein said first device includes a packet

2   rewriter coupled to at least one said net-work output interface; and

3   said second device includes a packet rewrite generator coupled to said first

4   device, said packet rewrite generator disposed for generating said packet forwarding

5   information and output port information;

6   wherein said packet rewrite element is responsive to said packet rewrite

7   generator.

1   3.   (Original)   Apparatus as in claim 1, including a packet buffer memory coupled to

2   said first device.

1   4.   (Previously Presented)   Apparatus as in claim 1, wherein said first device

2   comprises a single monolithic semiconductor circuit.

1   5.   (Previously Presented)   Apparatus as in claim 1, wherein said second device

2   comprises a single monolithic semiconductor circuit.

1   6.   (Previously Presented)   Apparatus as in claim 1, wherein a single monolithic

2   semiconductor circuit comprises said first device and said second device.

1   7.   (Original)   Apparatus as in claim 1, including a rewrite table including said re-

2   write information.

1 8.   (Original)   Apparatus as in claim 7, wherein said first device includes said re-

2 write table.

1 9.   (Original)   Apparatus as in claim 7, wherein said second device includes an

2 address pointing into said rewrite table, wherein said address can be forwarded to said first

3 device.

1 10.   (Currently Amended) Apparatus including

2   a first device having at least one input interface and at least one output

3 interface, said first device including an information extractor having an input coupled

4 to a packet received from said input interface and having an output coupled to a first

5 memory, said first device comprising logic for extracting packet information without

6 performing packet forwarding decisions; and

7   a second device including a decision generator having an input coupled to said

8 first device, and having an output coupled to said first device, wherein said second

9 device performs generating packet forwarding information substantially for first

10 packets substantially in parallel with said first device performing extracting packet

11 information for other packets, wherein the second device accesses a forwarding

12 memory to record one or more forwarding information rules as the forwarding

13 information rules become available to the second device in response to changes in any

14 one of network topology, access control, and administrative and managerial rules;

15   wherein said first device is responsive to a forwarding treatment from said

16 second device to determine a set of said output interfaces on which to couple said

17 packet;

18   a network flow routing engine coupled to said second device, wherein the

19 network flow routing engine determines network flow packet forwarding information

20 in response to receiving network flow information associated with said packet

21 information extracted by said information extractor and provides said network flow

22 packet forwarding information to said second device, wherein said second device uses

23   said network flow packet forwarding information in generating said packet

24   forwarding information;

25   an input access content addressable memory coupled to said second device

26   and operable to determine whether access is permitted at said at least one input

27   interface; and

28   an output access content addressable memory coupled to said second device

29   and operable to determine whether access is permitted at said at least one output

30   interface.

1   11.   (Original)   Apparatus as in claim 10, wherein said forwarding treatment includes

2   packet rewrite information; and

3   said first device is responsive to said packet rewrite information to rewrite said

4   packet before coupling said packet to said set of output interfaces.

1   12.   (Original)   Apparatus as in claim 10, wherein said forwarding treatment includes

2   at least one action relating to accounting.

1   13.   (Original)   Apparatus as in claim 10, wherein said forwarding treatment is

2   responsive to information regarding access control.

1   14.   (Original)   Apparatus as in claim 10, wherein said forwarding treatment is

2   responsive to information regarding class of service or quality of service.

1   15.   (Original)   Apparatus as in claim 10, wherein said forwarding treatment is

2   responsive to information regarding parsing, extracting and encoding the packet information

3   passed from said first device to said second device so as to minimize the amount of said

4   information forwarded between said first device and said second device.

1   16.   (Original)   Apparatus as in claim 10, wherein said forwarding treatment is

2   responsive to said packet information memory.

1   17.   (Previously Presented)   Apparatus as in claim 10, wherein said first device

2   comprises a single monolithic semiconductor circuit.

1   18.   (Previously Presented)   Apparatus as in claim 10, wherein said second device

2   comprises a single monolithic semiconductor circuit.

1   19.-22. (Canceled)

1   23.   (Canceled)

1   24.   (Currently Amended) A method as recited in Claim [[23]] 35, wherein the steps

2   performed by the Packet Processing Engine and the steps performed by the Fast Forwarding

3   Engine are performed in parallel.

1   25.   (Currently Amended) A method as recited in Claim [[23]] 35, wherein said one or

2   more input interfaces are coupled to at least one communication network.

1   26.   (Currently Amended) A method as recited in Claim [[23]] 35, wherein the step of

2   distinguishing first packet header information from a first input packet is performed by

3   parsing said first packet.

1   27.   (Currently Amended) A method as recited in Claim [[23]] 35, wherein the packets are

2   stored and accessed by a packet index.

1   28.   (Currently Amended) A method as recited in Claim [[23]] 35, wherein the first packet

2   header includes an IP source address, IP source port, IP destination address, IP destination

3   port, protocol type, and information indicating whether the packet is unicast or multicast.

1   29.   (Currently Amended) A method as recited in Claim [[23]] 35, wherein the step of

2   generating an output packet based on said packet forwarding information includes a rewrite

3   operation.

1   30.   (Previously Presented)   A method as recited in Claim 29, wherein the rewrite

2   operation includes adjusting hop count for the packet, determining a new CRC and

3   performing packet reformatting operations.

1   31.   (Currently Amended) A method as recited in Claim [[23]] 35, wherein said Fast

2   Forwarding Engine is coupled to assistance devices for assisting in making packet forwarding

3   decisions.

1   32.   (Currently Amended) A method as recited in Claim [[23]] 35, wherein said Fast

2   Forwarding Engine is coupled to a set of routing information memories.

1   33.   (Currently Amended) A method as recited in Claim [[23]] 35, wherein said Fast

2   Forwarding Engine is coupled to a forwarding content addressable memory.

1   34.   (Canceled)

1   35.   (Currently Amended) A method as recited in Claim 23, A method for packet

2   processing comprising computer-implemented steps of:

3   at a Packet Processing Engine, receiving a plurality of input packets at one or

4   more input interfaces, distinguishing first packet header information from a first input

5   packet, and forwarding said first packet header information to a Fast Forwarding

6   Engine;

7   at the Fast Forwarding Engine, determining packet forwarding information,

8   and sending said packet forwarding information to the Packet Processing Engine;

9   a network flow routing engine coupled to said Fast Forwarding Engine,

10   wherein the network flow routing engine determines network flow packet forwarding

11   information in response to receiving network flow information associated with said

12   first packet header information and provides said network flow packet forwarding

13   information to said Fast Forwarding Engine, wherein said Fast Forwarding Engine

14   uses said network flow packet forwarding information in generating said packet

15   forwarding information;

16   generating, at said Packet Processing Engine, an output packet based on said

17   packet forwarding information and said first packet; and

18   sending said output packet from a first output interface among one or more

19   output interfaces of the Packet Processing Engine,

20   wherein the Fast Forwarding Engine is coupled to and accesses a forwarding

21   memory to record one or more forwarding information rules as the forwarding

22   information rules become available to the Fast Forwarding Engine in response to

23   changes in any one of network topology, access control, and administrative and

24   managerial rules, and

25   wherein said Fast Forwarding Engine is coupled to an input access Content

26   Addressable Memory and an output access Content Addressable Memory.

1   36.   (Canceled)

1   37.   (Previously presented)   A method as recited in Claim 33, wherein the Fast

2   Forwarding Engine sends the packet header information to the forwarding content

3   addressable memory.

Docket No.: 50325-0756   8

1   38.   (Currently Amended) A method as recited in Claim [[36]] 37, wherein the forwarding

2   Content Addressable Memory determines packet forwarding information based on the packet

3   header information.

1   39.   (Canceled).

1   40.   (Currently Amended) A method as recited in Claim [[23]] 33, wherein the Fast

2   Forwarding Engine accesses the forwarding Content Addressable Memory to retrieve the

3   packet forwarding information.

1   41.   (Currently Amended) A method as recited in Claim [[23]] 35, wherein the Fast

2   Forwarding Engine forwards an identifier to said of a first input interface, at which said first

3   packet is received, to said input access Content Addressable Memory to determine if access is

4   permitted for said first packet.

1   42.   (Currently Amended) A method as recited in Claim [[23]] 35, wherein the Fast

2   Forwarding Engine forwards an identifier to of said first output interface to said output access

3   Content Addressable Memory to determine if access is permitted for said first packet.

1   43.   (Currently Amended) A method as recited in Claim [[23]] 35, further comprising the

2   step of storing said first packet in said Packet Processing Engine.